

REMARKS

Upon entry of the Amendment, Claims 1, 4, 5 and 21-34 will be pending in the application.

New Claims 33-34 are added. In new Claim 33, Ti has been removed from the claim, and as a result, materials for the seed layer include at least one type of metal selected from the group of Ta, Mo, W, V, Zr, Cr, Rh, Hf, Nb, Mn, Ni, Al, and Ru, or an alloy of these elements. This embodiment is different from the disclosure of Okuyama et al., for example, in the composition of the seed layer of the present invention as the reference Okuyama et al. describes Ti (e.g. in col. 15, lines 45, 57, etc.).

Applicants add new Claim 34 describing that the preferable thickness of the seed layer is in the range of 20 - 60 nm. Support for new Claim 34 is based on page 9, lines 24 and 25 of the specification.

No new matter is added. Entry of the new claims are respectfully requested.

Reconsideration and review of the claims on the merits are respectfully requested.

The Examiner's Response to Our Arguments

The Examiner states that Applicants' arguments have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

Claims 1, 4, 5 and 21-32 are rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over Okuyama et al. (U.S. Patent No. 6,071,607) in view of Mimura et al. (U.S.

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Patent No. 6,368,722) and Hosoi et al. (U.S. Patent No. 5,702,794) for the reasons given in the Office Action.

Claims 1, 4, 5 and 21-32 are rejected under 35 U.S.C. §103(a) as being unpatentable over Okuyama et al. in view of Hosoi et al., Sueoka et al. (WO 99/020463) and Saito et al. (JP 10-021529 A) for the reasons given in the Office Action (The Examiner provided the Machine Translation of JP '529 A, as well as U.S. Patent No. 6,358,619 B1, which is asserted to be the U.S. equivalent to WO '463).

For both rejections, the Examiner states that regarding Claim 1, Okuyama et al. discloses a floppy disk comprising a base material and, sequentially formed on at least one surface of said base material, a metal seed layer ("Ti"), a primer layer ("CrMo"), a magnetic layer, a protective layer and a lubricant layer, wherein said base material comprises a nonmagnetic flexible support member.

With regard to the limitations in the relative linear expansion coefficients and relative tensile strengths of the seed layer to the primer layer, the Examiner takes the position that these limitations would necessarily be present in the embodiments of the prior art since the claimed and prior art seed and primer layers are identical in composition and structural location. The Examiner's basis for this assertion is the comparison of the disclosed Okuyama metal seed layer ("Ti") and primer layer ("CrMo") versus Applicants' disclosed materials for use as the metal seed layers and primer layers.

Applicants respond as follows.

First, Applicants note that the new reference to Mimura et al. (U.S. 6,368,722) issued on April 9, 2002, has a filing date of November 30, 1999. The U.S. filing date of this reference is later than the priority date of the present invention, which is September 27, 1999. Accordingly, it should be removed from the rejection under 35 U.S.C. §102 (e) as Applicants submit a sworn English translation of the JP patent application No. 11-272644, filed on September 27, 1999, supporting the elements of the present claims. Accordingly, Applicants respectfully request withdrawal of the reference to Mimura et al. along with reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) depending on at least Mimura et al.

Applicants also traverse the rejections based on structural distinctions with the primary reference to Okuyama et al. The present invention relates to a floppy disk as it is described in the title.

On the other hand, although the reference to Okuyama et al. refers to a floppy disk, what is actually described in Okuyama et al. is a hard disk type magnetic disk device. In col. 10, lines 35 - 40, Okuyama et al. describes suitable substrate materials, including, e.g., a plastic disk. However, these disclosed substrate materials are rigid materials, which are used as the basis for a hard disk.

In contrast, the present invention provides, as described on pages 1-2, a high-density removable type magnetic recording medium having high shock-resistant property, using a flexible support member as the substrate. The present invention provides a floppy disk which is suitable for high-density recording and which can solve the problems of the flexible support

member of 30 - 150 μm in thickness in order to form a magnetic layer. That is, the present invention makes it possible to perform high-density recording using a floppy disk.

For this purpose, a heat-resistant macromolecular flattening layer of silicone resin, polyimide resin, polyamideimide, or polyamide resin is formed on the flexible support member. Then, after a seed layer is formed with linear expansion coefficient of a specific value, a magnetic layer, a protective layer, and a lubricant layer are provided to obtain a floppy disk. By providing a seed layer between the flexible support member and the primer layer, it is possible to prevent cracking in the manufacturing process and to obtain a floppy disk with stable performance characteristics.

As described above, the present invention is distinguishable from the magnetic recording medium for the disk device of Okuyama et al. not only in the problems to be solved but also in their arrangements.

Furthermore, Applicants provide Experimental Data below to demonstrate the differences between the present invention and Okuyama et al. Applicants provide experimental results, in particular examples 21-24 of the Table, related to Okuyama's disclosure using a CrMo primer layer and also using a thin layer of Ti as an additional primer layer as this combination does not satisfy Applicants' claimed requirement of the expansion ratio, and furthermore, demonstrates unacceptable cracking resulting in a "poor" evaluation. This type of evidence directly refutes the Examiner's position that the expansion ratio limitation would necessarily be present in the embodiments of the prior art since the claimed and prior art seed and primer layers are assertedly

identical in composition and structural location. Additionally, the Experimental Data shows unexpectedly superior results based on the floppy disk of the present invention.

Additional layer	Primer layer	SUL	SUL	Seed layer	Thickness (nm)	RSE	SEI	Expansion ratio	Strength ratio	Cracking
1	CrTi ₂ O	6.9	38.4	Ta	20	6.5	53.0	0.13	1.38	0 (excellent)
2	↑	↑	↑	↑	50	↑	↑	↑	↑	0 (excellent)
3	↑	↑	↑	↑	5	↑	↑	↑	↑	1 (good)
4	↑	↑	↑	↑	70	↑	↑	↑	↑	2 (good)
5	CrTi ₂ O	6.9	38.4	Mo	20	5.1	49.0	0.26	1.28	0 (excellent)
6	↑	↑	↑	↑	50	↑	↑	↑	↑	0 (excellent)
7	↑	↑	↑	↑	5	↑	↑	↑	↑	1 (good)
8	↑	↑	↑	↑	70	↑	↑	↑	↑	1 (good)
9	CrTi ₂ O	6.9	38.4	Rh	20	8.5	54.9	0.23	1.43	0 (excellent)
10	↑	↑	↑	↑	50	↑	↑	↑	↑	0 (excellent)
11	↑	↑	↑	↑	5	↑	↑	↑	↑	1 (good)
12	↑	↑	↑	↑	70	↑	↑	↑	↑	2 (good)

13	CrMo ₂ O	6.2	43	Ta	20	6.5	53.0	0.04	1.23	0 (excellent)
14	↑	↑	↑	↑	50	↑	↑	↑	↑	0 (excellent)
15	↑	↑	↑	↑	5	↑	↑	↑	↑	1 (good)
16	↑	↑	↑	↑	70	↑	↑	↑	↑	2 (good)
17	CrMo ₂ O	6.2	43	Mo	20	5.1	49.0	0.18	1.13	0 (excellent)
18	↑	↑	↑	↑	50	↑	↑	↑	↑	0 (excellent)
19	↑	↑	↑	↑	5	↑	↑	↑	↑	1 (good)
20	↑	↑	↑	↑	70	↑	↑	↑	↑	1 (good)
21	CrMo	6.2	43	Ti	20	8.4	52.0	0.35	1.209	3 (poor)
22	↑	↑	↑	↑	50	↑	↑	↑	↑	28 (poor)
23	↑	↑	↑	↑	5	↑	↑	↑	↑	30 (poor)
24	↑	↑	↑	↑	70	↑	↑	↑	↑	19 (poor)

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For the foregoing reasons, Applicants submit that Okuyama et al. in view of the secondary references do not render obvious the present invention.

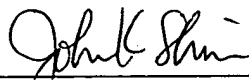
Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a).

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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